North Dakota
Department of Environmental Quality
Division of Water Quality

To: Legislative Council

From: Division of Water Quality

RE: Comments Received and Department Response on the Proposed Amendments to the Standards of Quality for Waters of the State N.D. Administrative Code Chapter 33.1-16-02.1 by the Director of the North Dakota Department of Environmental Quality.

Comments are listed and responded to in the order they were received.

All comments regarding North Dakota Administrative Code Chapter 33.1-16-02.1directed to the North Dakota Department of Environmental Quality (NDDEQ) have been considered.

The full comments are included in the final package.

Date: April 8, 2021

I. Miguel A. Martinez, Environment – Meridian Energy Group. By Phone on August 19, 2020.

Comment 1: The proposed ammonia criteria in the full notice on the department's website could not be calculated as expressed.

Department Response to Comment 1: The department agreed with Mr. Martinez, corrected the equation on the website, and resent the notice to all individuals on the list serve on August 21,2020.

II. Randy D. Binegar, PE, Environmental Supervisor - Mandan Refinery Marathon Petroleum. By Email on September 11, 2020.

Comment 2: Proposes that the line in 33.1-16-02.1-11(4) [Depending on the severity of the spill or accidental discharge, the department may require the owner or operator to:] not be deleted as proposed, and the following language [The owner or operator is required to:] be deleted.

Due to the lack of a definition for "causing pollution of waters of the state", it is believed the suggested change allows the DEQ flexibility to deal with issues in a constructive manner.

Department Response to Comment 2: The department agrees there are advantages to Mr. Binger's comments, however the language suggested would make the

requirements of (a) through (e) conditional upon the severity of the spill and discretionary by the department.

Instead, the department proposes adding the conditional language to (a), based on the severity of the spill. Items (c) and (d) already include conditional statements, i.e., "impacted by the spill" and "on request".

The department does not feel that determining the extent of pollution to waters of the state should be a discretionary or conditional action. It should be done in every instance. Removing the conditional language provides a clearer expectation of what is required in the event of any spill.

III. Dr. Madeline Z. Luke, MD. By email on October 23, 2020.

Comments 3: "Updated the chronic aquatic life Mercury criteria from 0.012 µg/L to 0.88 µg/L total recoverable to reflects the CWA Section 304(a) Criteria Recommendation for the Protection of Aquatic Life. "

Commented that a 77-fold increase in allowable chronic aquatic level begs the question why. Mercury 's role in the environment and human health is a complicated but significant issue. In reviewing the USGS Circular on "Mercury in our Nation's Stream", I came away with a list of knowns and unknowns.

Things we know:

1. There are significant neurotoxicity and reproductive effects by methylmercury on humans, birds and fish,
2. Methylation of elemental mercury increases with sulfate-dependent bacteria, frequent flooding with inundation,
3. Soil bound mercury gets into soil water with erosion,
4. Coal burning plants are a major source of elemental mercury. In 2005, only 10% is naturally occurring while the remainder was anthropomorphic with about 55% coming from coal burning plants (p24),
5. The background (pre-industrial) levels of mercury in ND soils are low (p45), and
6. An advisory for limiting ND fish intake by all, but especially pregnant women and young children, with respect to mercury was released in 2003 by ND state agencies.

Issues that are not clear:

1. The "safe" level of mercury in fish, and fish-eating animal tissue is unknown, having been documented at under 0.3 ppm, the USEPA tissue mercury criterion for protection of human health (p 12).
2. Why there has not been a repeat evaluation of mercury levels in fish for human consumption in about 20 years. Why there is so little data on present mercury levels in ND water?
3. Why there should be such a significant change in allowable mercury level in our waterways now.

4. What, if any, are the plans for future monitoring in fish or human levels of mercury or even water which will occur after the proposed institution of this measure.

The mission of the ND DEQ is to protect the environment for human and wildlife health; its decisions should be based on the best data available and an inclination to be conservative. Over the last 20 years, we have had numerous floods causing recurrent bank inundation and soil erosion throughout the state. Locally in Barnes County, the sulfate levels in the Sheyenne River have exceeded the historical levels prior to the Devils Lake outlets. We continue to have operating coal plants, a major source of elemental mercury and should President Trump's rollback on mercury emissions stand, one can anticipate that more mercury again will enter the biosphere. All these potentially affect the amount of mercury entering the water and methylation. We have not much current data on what is in the ND water, fish or humans now. Since we know mercury is dangerous to most living things, there must be an excellent reason to relax standards so significantly without demonstrating that this action is safe. Without baseline and ongoing monitoring data, this action appears ill advised and somewhat inexplicable. EPA does not limit the state from having a more stringent standard than Federal standards. ND should have the best possible water quality, not just the water that means a numerical standard that might or might not change. Why change the standard now and by so much?

Department Response to Comment 3: The department appreciates and respects Dr. Luke's comments and expertise on the potential impacts of mercury to the environment and human health.

The departments reasoning behind proposing a change to mercury is based on the most current science. The historical criteria of 0.012 µg/L, is derived from the bioconcentration factor of 81,700 for methylmercury calculated in 1975. The proposed criteria is the most recent USEPA criteria recommendation (CWA Section 304(a)) for the protection of aquatic life publish in 1995.

The department has been cautious in reacting to the newer recommended criteria for reasons like those pointed out by Dr. Luke. It is a large increase over what was in presumed safe in 1975 and is it truly protective based on all the possible pathways for mercury to get into the ecological system. In reviewing the proposed change to mercury, the department looked at the safety factors supplied by other standard criteria and it is confident that aquatic life can be protected, without placing additional risk to non-aquatic animals and humans through the implementation of other criteria.

For example, the Mercury criteria in place to ensure human health protection are the human health criteria of 0.05 µg/L for two routes of exposure (ingestion and drinking) and 0.051 µg/L for a single route of ingestion (Standards of Quality for Waters of the State, Table 2). Another example is the mercury criteria for fish consumption based on 0.3 µg/L and adjusted for sensitive populations. For

example, based on 8 meals of fish/month the criteria from fish consumption is 0.30 µg/L for the general population, 0.2 µg/L for children 6 to 15 years of age, 0.10 µg/L for pregnancy and nursing woman, 0.067 µg/L for children under 6 (A Guide to Safe Eating of Fish Caught in North Dakota, July 2003).

While outside the scope of this review, Dr. Luke does ask two important questions: "(1) Why there has not been a repeat evaluation of mercury levels in fish for human consumption in about 20 years and (2) why is there so little data on present mercury levels in North Dakota's waters?" The department agrees this would be useful and as a solution will restart the fish flesh mercury surveillance the summer of 2021 and investigate the possibility of adding mercury to its ambient stream and lake monitoring network.

IV. United States Environmental Protection Agency, Andrew Todd - Chief Water Quality Section. By Email on October 23, 2020.

Comment 4: Since North Dakota's last triennial review, the EPA has published recommendations for aluminum aquatic life criteria1 and for human health recreational ambient water quality criteria/swimming advisories for two cyanotoxins: microcystins and cylindrospermopsin. Please provide an explanation indicating why these new or updated CWA section 304(a) criteria are not being proposed for adoption at this time.

Department Response to Comment on Recommended Aluminum Criterion in Comment 4: The updated CWA section 304(a) criteria for aluminum was investigated but not proposed for implementation. Based on the department's investigation, the updated aluminum criterion is a function of pH, total hardness, and dissolved organic carbon (DOC).

In summary the new aluminum criteria, requires a substantial amount of data, yields more accurate criterion, but not an increase in aquatic life protection over the current criteria.

The current chronic and acute aluminum criterion of 87 µg/L and 750 µg/L are easily applied and understood, and in hard water hard water (>250 mg/L CaCO3) more stringent then the updated version with a chronic criteria range of over 3000 µg/L and acute of over 4000 µg/L.

Further, the updated criterion is sensitive to select parameters (i.e., pH, DOC) that make characterizing the condition difficult. At best this would delay development of the appropriate criteria and at worst get the criteria incorrect. Additionally, when the department tested the criteria by entering data into the spreadsheet supplied by USEPA to calculate aluminum criteria with concentrations DOC of 5 and a hardness as CaCO3 of 150 (North Dakota's water have an average DOC of 10.83mg/L (n=2,835) and a Hardness 566 mg/L

(n=20,734)) the acute and chronic criterion are less stringent than the current criteria.

While the increased accuracy of the updated aluminum criteria is not in question, it does not, in hard water (>150 mg/L CaCO3) with a DOC of 5 mg/L appear to provide an increase in aquatic life protection. Additionally, and just as importantly, the added accuracy is obtained at a cost in simplicity and transparency. Based on these two main premises the department choices not to adopt the updated aluminum criteria.

While not contemplating implementation into this review, the department will continue to investigate the usefulness of the updated aluminum criteria with the possible addition as a site-specific criteria option during the next triennial review.

Department Response to Comment on Recommended Human Health Recreational Ambient Water Quality Criteria/Swimming Advisories for Two Cyanotoxins: Microcystins and Cylindrospermopsin in Comment 4:

The recommended Human Health Criteria was published in on June 6, 2019 and the state's triennial review went out for public notice on July 12, 2019. The publication date allowed only a short period to review the final recommend human health recreational ambient water quality criteria or swimming advisory for Microcystins and Cylindrespermpsin.

The departments review primarily centered on how to rectify the difference between the state's active harmful algal bloom advisory for contact recreation of 10 µg/L microcystin (World Health Organization's recommendation) and the lower criteria of 8 µg/L for microcystin. Additionally, the department was struggling with how to quickly screen below 10 µg/L microcystin, the bottom end of the rapid tests available. Basically, how could the state have a water quality standard to protect human health that is lower than what is currently being advised as protective and below what can be measure quickly enough to be real world protective.

Currently the department believes the conflict between the states harmful algal bloom advisory and the recommended criterion as manageable, and will propose adoption of the recommend human health recreational ambient water quality criteria or swimming advisory for Microcystins and Cylindrespermpsin during the next standards update which is slated to begin fall of 2021.

Comment 5: The department proposes to adopt EPA's recommended criterion for selenium in fish flesh without EPA's accompanying recommended water column values. The proposed approach of retaining the state's existing selenium water column values and linking those to EPA's recommended fish tissue values would not be defensible and protective, unless the state can provide data and

information to explain why it is appropriate to link the existing water column values with our national recommended fish tissue values. EPA understands that state-specific data may indicate that water column values different from EPA's national recommendations may be appropriate for the state, and therefore encourages the state to continue to work on revisions to its selenium criterion and is willing to assist and help advise DEQ on conducting future studies and sampling design.

Department Response to Comment 5: The department agrees with this comment and will modify footnote number 4 in Table 1 to clarify that there is no linkage between the selenium fish flesh criteria in Table 1 with water column criteria in Table 2. The proposed language in the footnote is:

4 Fish tissue elements are expressed as steady-state instantaneous measurement not to exceed. When fish egg/ovary concentrations are measured, the egg/ovary criterion element supersedes any whole-body, or muscle criterion element. The fish flesh values in Table 1 and the water column criteria in Table 2 are independently applicable. Water column criterion elements that are derived site-specifically using an empirical bioaccumulation factor approach or a bioaccumulation mechanistic model approach, once duly established under the provisions of 40 CFR 131 will supersede the criteria in Table 2 and will be subordinate to fish tissue criterion elements when both fish and water concentrations are measured. Any site-specific water column criterion element established under the provisions of 40 CFR 131 is the applicable criterion in the absence of fish tissue measurement, or in waters with new discharges of selenium where steady state has not been achieved between water and fish tissue at the site.

Comment 6: The USEPA recommends that North Dakota include language in the water quality standards to address downstream use protection. Pursuant to sections 303 and 101(a) of the Clean Water Act, 40 CFR§131.10(b) requires that "In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters. "This provision requires states and authorized tribes to consider and ensure the attainment and maintenance of downstream WQS during the establishment of designated uses and water quality criteria in upstream waters.

Department Response to Comment 6: Protection of downstream uses is inferred in 33.1-16-02.2. **Purpose**.

2. The state and public policy is to maintain or improve, or both, the quality of the waters of the state and to maintain and protect existing uses. Classifications and standards are established for the protection of public health and environmental resources and for the enjoyment of these waters, to ensure the propagation and well-being of resident fish, wildlife, and all biota associated with, or dependent upon,

these waters; and to safeguard social, economical, and industrial development. Waters not being put to use shall be protected for all reasonable uses for which these waters are suitable. All known and reasonable methods to control and prevent pollution of the waters of this state are required, including improvement in quality of these waters, when feasible. a. The "quality of the waters" shall be the quality of record existing at the time the first standards were established in 1967, or later records if these indicate an improved quality. Waters with existing quality that is higher than established standards will be maintained at the higher quality unless affirmatively demonstrated, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, that a change in quality is necessary to accommodate important social or economic development in the area in which the waters are located. In allowing the lowering of existing quality, the department shall assure that existing uses are fully protected and that the highest statutory and regulatory requirements for all point sources and cost-effective and reasonable best management practices for nonpoint sources are achieved. b. Waters of the state having unique or high-quality characteristics that may constitute an outstanding state resource shall be maintained and protected.

Downstream uses are afforded protection by including standards and criteria (narrative and numeric) that are as stringent or more stringent than published by USEPA pursuant to Section 304(a) of the Clean water Act. The reference is if it is protective of North Dakota water it is protective of our downstream neighbors.

Lastly North Dakota has a robust system of checks and balances to ensure the intent of the law is followed and that all concerns in North Dakota and downstream are heard. This includes solicitation of views and comments through a public comment period and hearing (no entity, state, or province commented on the current or proposed rules), Environmental Review Advisory Council, review by the Attorney General, and review by Legislative Rules committee. The department believes the language in the standards, public comment opportunity process, and legal review fulfills the requirements of both sections 303 and 101(a) of the Clean Water Act, 40 CFR§131.10(b).

Comment 7: In Table 1, under the heading "Substance or Characteristic," the designation for "b" of "domestic drinking water" is somewhat unclear. We recommend that the reference be clarified to explain what it is referring to as related to the limits listed in Table 1. Such clarification would be helpful to understand implementation for these limits in permits.

Department Response to Comment 7: The department feels that the beneficial uses are adequately defined under "Definitions" in 33.1-16-02.1-04.

Comment 8: Table 2 – Water Quality Criteria. It is recommended to clarifying footnote 1 at the bottom of p. 16. As written, it is confusing. It reads: "Except for the aquatic life values for metals, the values given in this appendix refer to the total (dissolved plus suspended) amount of each substance. For the aquatic life values for metals, the values refer to the total recoverable method for ambient metals analyses."

EPA recommends that aquatic life criteria be implemented with the dissolved fraction with a few exceptions (e.g., aluminum).

• If it is North Dakota's intent to implement most aquatic life metals criteria as a total fraction, footnote 1 could read "Except for the aquatic life values for metals, the values given in this appendix refer to the total (dissolved plus suspended) amount of each substance unless otherwise noted. For the aquatic life values for metals, the values refer to the total recoverable method for ambient metals analyses."

Department Response to Comment 8: The department does agree the recommended language in the comments to footnote 1 in Table 2 provides greater clarity and will make the changes to the footnote to reflect that.

Comment 9: North Dakota's proposed revisions to the hardness-based aquatic life metals criteria do not include conversion factors found in Appendices A and B of EPA's nationally recommended aquatic life criteria. These conversion factors convert the total fraction of the metals to the dissolved fraction of the metals, consistent with EPA recommendation. If it is North Dakota's intent to implement its aquatic life metals criteria as a dissolved fraction, we recommend adding the metal-specific conversion factor for each metal.

Department Response to Comment 9: The department's intent is to continue expressing the aquatic life criteria for trace element as total.

To support the aquatic life criteria, the department uses a total recoverable analysis for trace elements by design. The department believes using the total amount of an element is more protective as eventually all species of the element may become available to the biological community. Lastly, including a conversion factor would inject unnecessary error into the standards.